

WHAT IS CLAIMED IS:

1. A process kit for erosion resistance enhancement in a plasma etching chamber comprising:
 - a ring shaped to surround a semiconductor wafer; and
 - a layer of polymer material covering at least the top surface of the ring.
2. The process kit of claim 1 wherein the ring is made of quartz.
3. The process kit of claim 1 wherein the polymer material is a fluorocarbon-based material.
4. The process kit of claim 1 wherein the polymer material is Polytetrafluoroethylene.
5. The process kit of claim 1 wherein the polymer material completely covers at least the top surface of the ring.
6. The process kit of claim 1 wherein the polymer material is not reactive with any etchant in the plasma.
7. The process kit of claim 1 wherein the polymer material has similar permittivity to that of silicon oxide.
8. The process kit of claim 1 wherein the thickness of the layer of polymer material is between 0.5 and 1.5 mm.
9. The process kit of claim 1 wherein the polymer material is sputtered onto the surface of the ring.
10. The process kit of claim 1 wherein the polymer material is coated onto the surface of the ring.